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(54) Title: METHOD FOR AUTHORIZATION CHECK

(57) Abstract

Method for checking authorization incorporating a way to impart to a so-called smart card (SmartCard) an encryption key or equivalent key and including a way to cause a microprocessor, by means of the encryption key and at least one number, to perform a calculation whose result comprises a signature, and including a way to have said signature together with said number transferred to a system for which authorization is to be shown which includes a computer in which said encryption key is stored, said computer being programmed to carry out said calculation to obtain said signature and then to compare the latter signature with the first-mentioned signature.

Method for authorization check

The present invention relates to a method for checking the authorization of a person, in his/her capacity as user of a system such as a payment system or a data system.

Systems now in existence are used to check the authorization of a person in connection with payment. One such system is used within the Swedish Postal Service for payments made via postgiro. In accordance with this system, the customer receives a so-called SmartCard and a card reader for it. An encryption key is stored on the SmartCard, and it can be read by a microprocessor on the SmartCard after a PIN code has been entered.

The said encryption key is stored not only on the SmartCard, but also at the Swedish Postal Service postgiro department where it is linked to a specific person.

When a payment is to be made, the user keys in the said PIN code, the number of the account to which the payment is to be sent and the amount in question. Herewith, the microprocessor performs a calculation based on the amount, the account number and the encryption key in accordance with the so-called DES (Data Encryption Standard) algorithm, wherewith a signature is generated by the said calculation. After this is done, the amount, the account number and the signature are transferred to the postgiro department in a suitable manner, via data, mail or fax for example.

The postgiro department receives the information and then performs the same calculation as set forth above and compares the result with the signature that was transferred. If the comparison results in a match, an authorized person, i.e. the holder of the SmartCard, is deemed to have ordered the transaction, wherewith the transaction is executed. The transaction is executed by transferring money from the postgiro

ture, characterized in that the said smart card is a so-called SIM-card intended for mobile telephony and a memory in said SIM-card is, in a first step, provided with unique information containing a unique identity in order to communicate telephonically using a mobile telephone and in that, in a second step, the SIM-card memory is provided with said encryption key, and in that a system for which authorization is to be shown is provided with the same encryption key linked to an identity of the SIM-card, and in that in response to the entry of an appropriate code and at least the said number via the keyboard on the mobile telephone, a microprocessor on the said SIM-card is induced to perform the said calculation resulting in the said signature.

The present invention is not limited to any special field with regard to showing authorization. Instead, it is applicable for all kinds of systems such as payment systems, data systems, systems that check authorization before allowing entrance etc.

The description of the present invention that follows, however, is for a system that provides payment via postgiro.

The system is described in greater detail below, partially in connection with an example of an embodiment shown on the attached drawing, where:

- Fig. 1 shows the included hardware schematically.
- Fig. 2 shows a SIM-card.
- Fig. 3 shows a schematic view of a block diagram for which a function is described.
- Fig. 4 shows a schematic view of a block diagram for which another function is described.

Fig. 1 shows mobile telephone 1 of an appropriately known type which is intended for use in a GSM system or an equivalent telephone system where a so-called smart card

memory 7 in said SIM-card 6 in such a way as to support telephonic communication using a mobile telephone. This appropriately takes place in the same as way as presently being used in the GSM system.

In a second step, the memory in SIM-card 6 is provided with the said encryption key. This memory can be the existing memory 7 or an extra memory. This is accomplished in a way that corresponds with the way the previously mentioned identity was entered, but it should preferably be carried out by the person who controls the system for which authorization is to be shown.

In accordance with the invention, the system for which authorization is to be shown is provided with the same encryption key linked to an identity for the SIM-card. Here, for example, the IMSI used for the SIM-card can serve as its identity ID. Alternatively, the encryption key in the said system can be linked to some other identity such as the user's telephone number, a customer number or a name. What is essential is that the system must later be able to retrieve the correct encryption key for a specified user.

The invention is further characterized in that when a suitable code is entered along with at least the said number via keyboard 2 on mobile telephone 1, a microprocessor on the said SIM-card is induced to perform the said calculation resulting in the said signature. The microprocessor can be the regular microprocessor that is normally incorporated into the SIM-card, but it can also be a separate microprocessor on the SIM-card. In the latter case, however, the separate microprocessor is linked to regular microprocessor 7 on the SIM-card.

The term "suitable code" means, for example, a code that is entered in order to put the mobile telephone in a mode in

In accordance with an alternative embodiment, the signature calculated by the mobile telephone together with at least the said numbers is caused to be transferred directly from the mobile telephone to said system via an interface between the mobile telephone and the system such as a computer 5 belonging to the system. The interface can comprise a cable 8 or an infrared link or some other suitable link.

In accordance with a preferred embodiment, the mobile telephone is caused to present the said signature on the mobile telephone display. In such case, the user can, for example, enter the said numbers and signature on a keyboard belonging to a computer that belongs to the system.

In accordance with a highly preferred embodiment, a special PIN code is assigned to the SIM-card in such a way that it can be used to enable the card for said calculation of the signature. This further enhances security since the user must a) know his/her PIN code to start the mobile telephone and b) know his/her PIN code to access and start the calculation process used to obtain the electronic signature.

To facilitate the making of correct payments for example and in accordance with a preferred embodiment, the mobile telephone is caused to present the said numbers on its display. An account number and an amount, for example, can be displayed before the signature is calculated.

When the signature has been calculated, data is thus transferred to the system. Herewith, as illustrated in Fig. 4, a user identity ID such as a telephone number, an IMSI or some other identity is always transferred. Signature SIG is also always transferred. Moreover, at least one number D1 or D2 is always transferred. If payments are involved, account number D1 and amount D2 are transferred. When this has happened, the system computer 5 retrieves the encryption key KEY that is linked to identity ID from a memory MEM and then calculates

Claims

1. Method for checking authorization incorporating a way to impart to a so-called smart card (SmartCard) an encryption key or equivalent key and a way to induce a microprocessor, by means of the encryption key and at least one number, to carry out a calculation whose result comprises a signature, and a way to have said signature, together with said number, transferred to a system for which authorization is to be shown, where said system includes a computer in which said encryption key has been stored and to have said system perform said calculation whose result will comprise said signature, and a way to have the computer compare the latter signature with the first-mentioned signature characterized in that said smart card is a so-called SIM-card (6) intended for mobile telephony, and in that the memory (MEM) on said SIM-card is, in a first step, provided with unique information including a unique identity in order to communicate telephonically using a mobile telephone, and in that the memory on the SIM-card in a second step is provided with said encryption key (KEY), and in that a system for which authorization is to be shown is provided with the same encryption key (KEY) linked to an identity of SIM-card (6), and in that when a suitable code (PIN) is entered along with at least said number via the keyboard (2) on the mobile telephone (1), a microprocessor (7) on the said SIM-card is induced to perform the said calculation resulting in the said signature (SIG).

2. A method in accordance with claim 1, characterized in that the said number contains at least two numbers.

3. A method in accordance with claim 1 or 2, characterized in that the signature (SIG) calculated by the mobile telephone (1, 7) together with at least the said number is caused to be transferred to said system (5) via the mobile telephone network.

Fig. 1

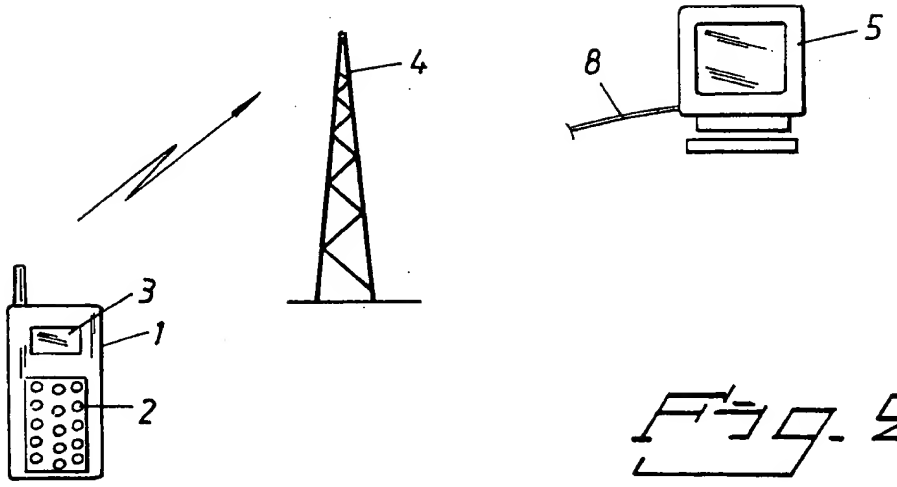


Fig. 2

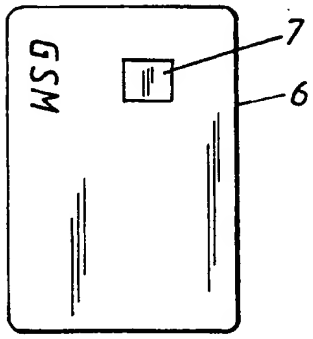


Fig. 3

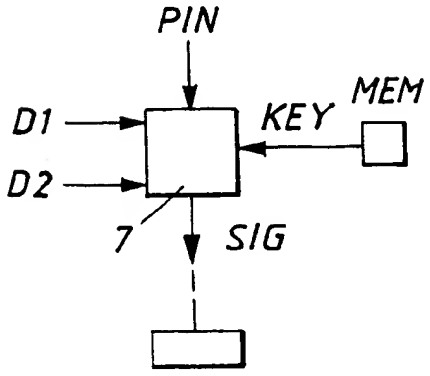
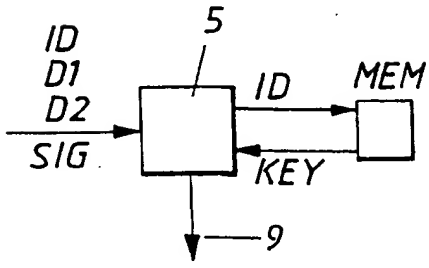


Fig. 4



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Information on patent family members

30/06/98

International application No.
PCT/SE 98/00206

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SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application Number
EP 00 96 1057

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Place of search	Date of completion of the search	Examiner
The Hague	12 January 2006	David, J

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